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FACSIMILE TRANSMITTAL

DATE: September 22, 2005

TO: Commissioner of Patents

FAX: 571-273-8300

FROM: Steven W. Stewart

PAGES: 8

RE: U.S. Patent Application No. 09/935,755

FILED: August 22, 2001

FOR: COUNTERACTING GEOMETRIC  
DISTORTIONS IN WATERMARKING

ART UNIT: 3621

DOCKET NO.: P0239S

☒ Urgent

☐ For Review


☐ Please Reply

**FACSIMILE COVER LETTER**

Attached is Notice of Appeal with deposit account authorization to deposit account No. 50-1071, Pre-Appeal Brief Request for Review and Reasons for Pre-Appeal Brief Request for review for the above referenced application.

**CERTIFICATE OF FAXING**

I hereby certify that these papers are being facsimile transmitted to the US Patent Office, 571-273-8300 on September 22, 2005.

  
Steven W. Stewart, Reg. No. 45,133  
Attorney for Applicant

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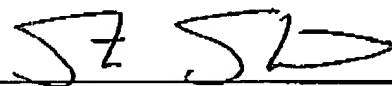
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PTO/SB/33 (07-05)

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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional)	
		P0239S	
<b>CERTIFICATE OF TRANSMISSION</b> I hereby certify that this paper and the documents referred to as being attached or enclosed herewith are being facsimile transmitted to the United States Patent and Trademark Office on September 22, 2005 at 571-273-8300.  Steven W. Stewart Attorney for Applicant		Application Number <b>09/935,755</b>	Filed <b>August 22, 2001</b>
		First Named Inventor <b>Geoffrey B. Rhoads</b>	
		Art Unit <b>3621</b>	Examiner <b>S. Cangialosi</b>
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.			
This request is being filed with a notice of appeal.			
The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.			
I am the			
<input type="checkbox"/>	applicant/inventor.	Signature	
<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)	Steven W. Stewart Typed or printed name	
<input checked="" type="checkbox"/>	attorney or agent of record. Registration number <b>45,133</b>	<b>503-469-4800</b> Telephone number	
<input type="checkbox"/>	attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____	<b>September 22, 2005</b> Date	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input checked="" type="checkbox"/>	*Total of <u>1</u> forms are submitted.		

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AP, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Art Unit: 3621 Conf. No.: 9736

Geoffrey B. Rhoads

Application No.: 09/935,755

Filed: August 22, 2001


For: Counteracting Geometric Distortions  
in Watermarking

Examiner: S. Cangialosi

Date: September 22, 2005

**CERTIFICATE OF TRANSMISSION**

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Steven W. Stewart  
Attorney for Applicant**REASONS FOR PRE-APPEAL BRIEF REQUEST FOR REVIEW**

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Sir:

On appeal, the final rejections will be reversed. One reason supporting reversal is that, contrary to the Examiner's articulated position<sup>1</sup>, the present application and its parents teach and describe methods and systems to compensate for geometric distortion through digital watermarking.

<sup>1</sup> The Examiner's only rejection of, e.g., claim 1 seems to be that: "[N]either the applicant [sic] instant application nor any of its parent disclose the compensation for affine geometric distortion in watermark or the problem of geometric distortion of any kind in watermarks." See page 2, paragraph 1, lines 8-11, of the final Office Action. *Emphasis added.* See also page 3, lines 1-4, of the final Office Action.

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Claim 1 recites that  $n$  by  $n$  blocks of data are subjected to affine<sup>2</sup> geometric distortion, and the blocks are spatially translated according to a spatially varying translation to compensate for an assumed affine geometric distortion.

Sometimes media signals are geometrically distorted, e.g., they are scaled, rotated and/or translated (e.g., re-oriented, shifted or offset). Such distortion can complicate watermark detection.

Applicant's specification provides ample support for counteracting geometric distortion through digital watermarking.

For example, the section<sup>3</sup> starting on page 76 of the specification teaches and describes, e.g., that in some cases an image or hidden information is "registered" to compensate for geometric distortion (e.g., orientation, rotation and/or scale). See, e.g., page 76, line 19 and lines 33-36. Counteracting geometric distortion is achieved through use of subliminal (or invisible) graticules. The term "graticule" generally describes calibration or orientation marks. See, e.g., page 77, lines 3-5. Subliminal graticules may serve as, e.g., a gridding function that can carry information, or to find an orientation, rotation and/or scale of other information (such as embedded information) or to orient an image or audio object itself. See, e.g., page 77, lines 6-9.

The subliminal graticule description is detailed (see, e.g., pages 77-82), enabling and has many accompanying figures (see, e.g., Figs. 29, 30, 31, 32, 33, 34, 35, 36 and 37).

Appendix A addresses geometric distortion head on. See, e.g., a description of Appendix A at specification page 96, lines 9-10: "The source code listing in Appendix A includes digital watermarking software for *counteracting geometric distortion using a hidden, embedded signal*." (*emphasis added*). Further Appendix A details are provided below.

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<sup>2</sup> An "affine" transformation includes, e.g., a class of linear 2-D geometric transformations which maps variables (e.g. pixel values located at position  $(x_1, y_1)$  in an input image) into new variables (e.g.,  $(x_2, y_2)$  in an output image) by applying a linear combination of translation, rotation, scaling and/or shearing (e.g., non-uniform scaling in some directions) operations. A quick Google search revealed many such definitions including the above found at <http://homepages.inf.ed.ac.uk/rbf/HIPR2/affine.htm>.

<sup>3</sup> The section is titled: "Method for Embedding Subliminal Registration Patterns into Images and other Signals."

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The "STAMP\_IT.C" program in Appendix A provides digital "reticles" to help determine registration requirements to find scale and rotation elements associated with image patterns. See, e.g., Appendix A, page 91, lines 3-8.

The "REGISTR.C" program in Appendix A uses a hidden pattern, e.g., digital reticles, to determine scale, rotation and offset (e.g., translation). See, e.g., Appendix A, page 100, lines 1-7.

Appendix C provides even further details for addressing the problem of geometric distortion.

Please consider the following:

- "The Align class provides services related to aligning (synonymous with registering) a suspect image with a reference image. The suspect [image] requires some combination of translation, scaling, and rotation to achieve this." Appendix C, Page 1, top of the left column; and
- "This function performs two basic services; first, it simply attempts to determine if a public subliminal grid exists or not; if one does exist, then the second basic service is to determine the rough scale and rotation state of that grid." Appendix C, Page 11, mid-way down in the left column.

The specification provides even further details for addressing the problem of geometric distortion.

For example, so-called hidden "ring" patterns can be used to help identify and counteract geometric distortion. The passage on page 47, line 33 – page 48, line 1 outlines an approach: "A ring also will fit nicely into the issue of scale/magnification changes, where the radius of a ring is a single parameter to keep track of and account for. Another property of the ring is that even the case where differential scale changes are made to different spatial axes in an image, the ring turns into an oval, many of the smooth and quasi-symmetric proprieties that any automated monitoring system will be looking for are generally maintained."

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A general summary associated with such ring (and knots) patterns recognizes the previously-described solution to geometric distortion: "Also, the section on symmetric patterns and noise patterns outlined yet another approach to the two dimensional case, wherein the nuances associated with two dimensional scale and rotation were more explicitly addressed. Therein, the idea was not merely to determine the proper orientation and scale of underlying noise patterns, but to have information transmitted as well...." See page 76, lines 33-36.

The final Office Action's grievance is that the specification provides no basis for compensation of affine geometric distortions in watermarks or the problem of geometric distortions of any kind in watermarks. See the Final Office Action at page 2, lines 8-11 and page 3, lines 1-4 (claim 1).

This is simply *not* true.

As discussed above, the application describes methods and systems for addressing geometric distortion through digital watermarking.

A claim chart for claim 1 is provided below to show examples of explicit support.<sup>4</sup>

Table I: Claim 1

Claim Elements	Specification Support
A method for extracting a watermark from compressed data containing a watermark comprising the steps of:	See, e.g., page 97, lines 15-24.  See also the many decoding sections, e.g., page 20, line 1 et seq.; page 39, et seq., etc.  See also page 40, line 28 – page 41, line 14.  See, e.g., page 35, lines 4-14; and page 81, lines 30-31.
receiving compressed data containing a watermark in the form of n by n blocks of data subjected to affine	See, e.g., page 35, lines 4-14; page 40, line 28 – page 41, line 14; page 81, lines 30-31; and Appendix C (e.g.,

<sup>4</sup> Additional claim charts can be seen with reference to our March 3, 2005 Amendment.

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geometric distortion;	pages 9-11).  See discussion of compensating for geometric distortion, e.g., at page 48, line 6 et seq.; page 76, line 17, et seq.; and Appendix A and Appendix C.  See also the sections mentioned in this paper.
spatially translating the blocks according to a spatially varying translation to compensate for an assumed affine geometric distortion; and	See discussion of compensating for geometric distortion, e.g., at page 76, line 17, et seq.; and Appendix C.  See, e.g., page 97, lines 15-24.  See also the sections mentioned in this paper.
extracting the watermark from the translated blocks of data.	See, e.g., page 97, lines 15-24.  See also the many decoding sections, e.g., page 20, line 1 et seq.; page 39, et seq., etc.

We respectfully request that the Examiner's final rejection be reconsidered and that the application be allowed.

Date: September 22, 2005

Respectfully submitted,

Customer No. 23735

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